

## Module Specification

### Module Summary Information

<b>1</b>	<b>Module Title</b>	Civil Engineering
<b>2</b>	<b>Module Credits</b>	20
<b>3</b>	<b>Module Level</b>	5
<b>4</b>	<b>Module Code</b>	BNV5118

<b>5</b>	<b>Module Overview</b>
<p>This module has been designed to enable you to use problem-based learning to understand the Technology of Civil Engineering and innovation now being applied by Construction Managers. You will expand your skills in interpreting information about project sites and you will develop a wider understanding of operational and constructional processes.</p> <p>Within the module you will be introduced to key aspects of Civil Engineering:</p> <p><b>Soil and site investigation:</b> ascertaining composition of sub-soils, groundwater levels, properties of substrata. Methods for site investigation: site visit, measurements, photographs, archive searches in local authority records. Methods for soil investigation: trial pits, trenches, hand augers, drilling of boreholes. Testing of soil samples (on site and at laboratories). Case studies of Proposed developments and associated external works. Interpretation of Site report: location map, site history, adjacent properties. Access, utilities, streams (above and below ground), groundwater level, soil properties from borehole logs. Interpreting and providing recommendations.</p> <p>Groundworks: site clearance, site preparation, groundwater control, excavation for foundations, safe load distribution, differential settlement, seasonal movement, sulphates in soil water, foundation areas and depths for pad foundations in mass and reinforced concrete, balanced foundations, trench support, props, ground pressures for various soils, angle of internal friction, water table, surcharge, triangles of pressure, resultant pressures. Effects of ground movement, trench collapse, fracture of utilities, hazards during construction.</p> <p><b>Main structural elements:</b> beams and columns in steel, timber and reinforced concrete, shuttering reinforced concrete, fixing of reinforcement, concrete curing and striking formwork; steel connections, bracing, fireproofing, bracing, water exclusion (rain, groundwater), moisture movement. Structural behaviour and analysis: compression, tension, bending, deflection; effects of loads (dead, live, wind)</p> <p><b>External works:</b> roads, drainage systems, SUDS, culverts, gravity and cantilever retaining walls. Structural calculations of stability against sliding and overturning.</p> <p>The module follows the Construction Management programme philosophy of developing students' intellectual and practical competence in technical, managerial, economic, theoretical and environmental aspects of construction. Similarly the learning and teaching philosophy incorporates learning through formal lectures including presentations, seminars, tutorials, and problem based scenarios, backed up by visits to construction sites and exhibitions when appropriate. Learning is practice-based, knowledge applied, work related learning, incorporating international perspectives of the processes.</p>	

<b>6</b>	<b>Indicative Content</b>
<p>This module is in recognition of the fact that Construction Managers can work on civil engineering projects in their careers, so it provides a broad overview of the technology of civil engineering. In addition it includes some structural calculations, which is useful not only to understand the importance of the sizes of structural elements, but more importantly that construction companies have to design their own Temporary Works. Finally it will cover some details of external works, which are all the elements of a development which are outside the building including roads, drainage and hard landscaping.</p>	

<b>7</b>	<b>Module Learning Outcomes</b>		
<b>On successful completion of the module, students will be able to:</b>			
	<b>1</b>	Analyse the methods and purposes of site and soil investigations.	
	<b>2</b>	Analyse and examine commercial foundations, retaining walls and trench supports, groundworks and temporary works.	
	<b>3</b>	Calculate the performance of the superstructure and the structural behaviour of the main elements.	
	<b>4</b>	Appraise the influences on the design and construction of external works.	

<b>8</b>	<b>Module Assessment</b>		
<b>Learning Outcome</b>			
	<b>Coursework</b>	<b>Exam</b>	<b>In-Person</b>
<b>1-4</b>	<b>X</b>		

<b>9</b>	<b>Breakdown Learning and Teaching Activities</b>	
<b>Learning Activities</b>	<b>Hours</b>	
<b>Scheduled Learning (SL)</b> includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable	48	
<b>Directed Learning (DL)</b> includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE	52	
<b>Private Study (PS)</b> includes preparation for exams	100	
<b>Total Study Hours:</b>	200	